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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,617	12/05/2003	Masataka Suzuki	06753.0571	7892

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EXAMINER
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HOFFBERG, ROBERT JOSEPH

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/727,617

Applicant(s)

SUZUKI ET AL.

Examiner

Robert J. Hoffberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11/7/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

***Detailed Action***

***Response to Arguments***

1. Applicant argues that during Tsunashima (US 3,953,664) soldering process that the heat conducting apertured portion's plating is broken due to thermal shock. The examiner respectfully disagrees. Tsunashima in Fig. 1 teaches the same structure as claimed by the applicant. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). The applicant is rebutting prima facie case of anticipation based upon on the thermal shock problem addressed by Tsunashima. First, the structure as shown in Fig. 1 depicts through hole plating as intact and the structure claimed by the applicant. Second, Tsunashima at Col. 3, lines 44-48 discloses, "even if the conductive layer 3 extending through the hole 8 is broken by soldering, the electric connection between the conductors 2a and 2b is still securely maintained through the hole 3." Applicant argues that the soldering process thermal shock problem is in the heat conduction apertured (#4) whereas Tsunashima discloses the thermal shock problem in a through-hole portion (#8). Applicant may be confusing another problem that Tsunashima is seeking to address, that of cycling of ambient temperature and humidity (Col. 1, line 61-Col. 2, line 6) that is unrelated to the thermal shock of the soldering process.

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2. Applicant argues that Tsunashima in view of Chobot (US 5,743,004) fails to teach the claims 5-7 of applicant's invention. The examiner respectfully disagrees. Based upon the above the response to arguments, the examiner has shown that Tsunashima teaches "heat conducting apertured portion [that] conducts heat from the solder-dip surface, and directs the heat to peripheral area of the through-holed portion on the component mount surface." Since the primary reference Tsunashima teaches the claim limitation, a secondary reference is not needed to teach the limitation.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsunashima (US 3,953,664).

Tsunashima teaches a mounting structure for an electronic component (#6), comprising: a wiring circuit board (#1) having one face serving as a component mount surface (#1 top) and the other face (#1 bottom) serving as a solder-dip surface; a wiring portion (#2a) formed on at least one of the component mount surface and the solder-dip surface (#2b) of the wiring circuit board; a through-holed portion (#8) extending through the wiring circuit board and connected to be electrically conductive (#3) with the wiring portion; a heat conducting (#3) apertured portion (#4) extending through the wiring circuit board and connected to be electrically conductive (#2a between #4 and #8) with

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the wiring portion, the heat conducting apertured portion being formed in the vicinity (see Fig. 1) of the through-holed portion; wherein the heat conducting apertured portion conducts heat from the solder-dip surface, and directs the heat to peripheral area of through-holed portion on the component mount surface (Col. 3, lines 46-48); and a lead portion (#7) of the electronic component inserted to the through-holed portion from the component mount surface and soldered (#8) to the wiring circuit board (claim 1), a heat collector portion (#2a between #4 and #8) extending from an end of the heat conducting apertured portion on the solder-drip surface, the heat collector portion being made of metal (Col. 2, line 4) (claim 2), the heat collector portion is connected to be electrically conductive (#3) with an end (#8 at #1 bottom) of the through-holed portion on the solder-dip surface (claim 3) and the heat conducting apertured portion is formed in a via hole (#4) (claim 4).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsunashima (US 3,953,664) in view of Chobot et al. (US 5,743,004).

Tsunashima et al. teach the claimed invention except for a shortest distance between an inner wall of the via hole and an inner wall of the through-holed portion. Chobot teaches the edge distance between the via hole or holes and the through-hole

being approximately 1 mm (see Fig. 2 and Col.4, lines 18-25). While Chobot et al. fails to teach the location of the holes in relationship to wiring portion, it would have been obvious to one of ordinary skill in the art at the time of the invention was made modify the mounting structure of Chobot et al. to locate the via hole or holes in the center, widthwise, longitudinal or any other position to allow the heat to be retained long enough to permit a good solder joint.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mizoguchi (JP 08-056069) teaches a wiring circuit board, a wiring portion, an electronic component, a through-holed portion and a heat conducting apertured portion, wherein the heat conducting apertured portion conducts heat from the solder-dip surface, and directs the heat to peripheral area of through-holed portion on the component mount surface.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH *RJH*

**MICHAEL DATSKOVSKIY**  
**PRIMARY EXAMINER**

*Robert J. Hoffberg*  
11/29/06